



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,801	03/04/2004	Yuji Nagatomo	027065-041	5224
21839	7590	07/08/2005	EXAMINER	
BUCHANAN INGERSOLL PC (INCLUDING BURNS, DOANE, SWECKER & MATHIS) POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404			COHEN, AMY R	
			ART UNIT	PAPER NUMBER
			2859	

DATE MAILED: 07/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/791,801

Applicant(s)

NAGATOMO ET AL.

Examiner

Amy R. Cohen

Art Unit

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/4/04; 4/23/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Objections

1. Claims 2, 3, 7, 8 are objected to because of the following informalities:

Regarding the aspect ratio in claims 2 and 3 and the primary particle diameter in claims 7 and 8, it is unclear from the claim language, the specification, and the drawings which diameter of the acicular particles Applicant is describing. Since acicular particles are needle shaped, they taper to a tip. It is unclear which part of the acicular particles Applicant would be measuring from to find an aspect ratio and a primary particle diameter.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikegawa et al. (U. S. Patent No. 5,652,649) in view of Eichorst et al. (U. S. Patent No. 5,731,119).

Claims 1-15: Ikegawa discloses a contact charger comprising a contact charging brush (20A) having brush fibers for charging and auxiliary charging particles (Col 6, lines 34-50).

Ikegawa et al. discloses the contact charger wherein the brush fibers of said charging brush have a thickness from 1 denier to 10 deniers (Col 18, lines 1-9).

Art Unit: 2859

Ikegawa et al. discloses the contact charger wherein a filling density of brush fibers of said charging brush is in the range from 120 pcs/mm² to 10,000 pcs/mm² (Col 3, lines 61-65, Col 20, lines 1-49).

Ikegawa et al. discloses the contact charger wherein the brush fibers of said charging brush have a volume resistivity from $1 \times 10^1 \Omega\text{cm}$ to $1 \times 10^8 \Omega\text{cm}$ (Col 11, lines 39-42, Col 18, lines 1-9, Col 33, lines 5-16).

Ikegawa et al. discloses the contact charger wherein said charging brush has a roller form, and the brush fibers of the brush roller were subjected to a hair-inclining processing to incline the brush fibers toward upstream in a rotating direction of the brush roller (Col 7, lines 15-40, Col 11, lines 11-47).

Ikegawa et al. does not disclose the contact charger wherein the auxiliary charging particles have acicular forms.

Eichorst et al. discloses a contact charger wherein the auxiliary charging particles have acicular forms (Col 5, lines 39-48).

Eichorst et al. discloses the contact charger wherein an aspect ratio of said auxiliary charging particles is in a range from 2 to 10,000 (Col 5, lines 39-48, Col 9, lines 30-43).

Eichorst et al. discloses the contact charger wherein an aspect ratio of said auxiliary charging particles is in a range from 10 to 200 (Col 5, lines 39-48, Col 9, lines 30-43).

Eichorst et al. discloses the contact charger wherein a primary particle diameter of said auxiliary charging particles is in a range from 0.05 μm to 5 μm (Col 9, lines 30-43, Col 10, lines 7-54).

Eichorst et al. discloses the contact charger wherein a primary particle diameter of said auxiliary charging particles is in a range from 0.1 μm to 5 μm (Col 9, lines 30-43, Col 10, lines 7-54).

Eichorst et al. discloses the contact charger wherein said auxiliary charging particles exhibit an average adhesion amount from 0.3 mg/cm^3 to 20 mg/cm^3 in a space filled with said brush fibers (Col 14, lines 38-67).

Eichorst et al. discloses the contact charger wherein said auxiliary charging particles have a volume resistivity not exceeding $1 \times 10^{10} \Omega\text{cm}$ (Col 9, lines 44-57, Col 13, lines 21-24).

Eichorst et al. discloses the contact charger wherein said auxiliary charging particles have a volume resistivity from $1 \times 10^{-4} \Omega\text{cm}$ to $1 \times 10^{10} \Omega\text{cm}$ (Col 9, lines 44-57, Col 13, lines 21-24).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the contact charger of Ikegawa et al. to include specifically acicular auxiliary charging particles, as taught by Eichorst et al., in order to further improve the electrically conductive layers, which are cost effective, resistant to the effects of humidity change, and which are durable and abrasion-resistant (Eichorst et al., Col 5, lines 7-35).

Regarding claims 4-7: Ikagawa et al. and Eichorst et al. disclose a contact charger wherein the brush fibers have a thickness from 1 denier to 10 deniers (Ikagawa et al., Col 18, lines 1-9) and wherein the auxiliary charging particles have length less than 0.5 μm , .015 μm (Eichorst et al., Col 9, lines 30-43, Col 10, lines 14-19), therefore a length (L) of a long axis of said auxiliary charging particles and a thickness (T) of each of said fibers of said charging brush would satisfy the relationship $L^2/T \leq 200$; $L^2/T \leq 50$; and $L^2/T \geq 0.001$.

Claims 16-20: Ikagawa et al. discloses an image forming apparatus (P1) for forming an image in an electrophotographic manner, comprising: a contact charger (2A) including a charging brush (20A) having brush fibers for charging, and auxiliary charging particles (Col 6, lines 34-50); a photosensitive member (1A) to be charged by said contact charger; an exposing device (3A) performing image exposure on said photosensitive member to form an electrostatic latent image; and a developing device (4A) developing the electrostatic latent image on said photosensitive member (Col 5, lines 37-58).

Ikagawa et al. discloses the image forming apparatus wherein said charging brush has a roller form, and is arranged to be driven to rotate in such manner that a surface of the brush roller moves counter a moving direction of a surface of the photosensitive member with an absolute value $|\theta|$ of relative peripheral speed ratio of the brush roller with respect to the photosensitive member satisfying a relationship of $1 \leq |\theta| < 5$ (Col 3, lines 40-65, Col 21, line 64).

Ikagawa et al. discloses the image forming apparatus wherein said charging brush has a roller form, and is arranged to be driven to rotate in such manner that a surface of the brush roller moves counter a moving direction of a surface of the photosensitive member with an absolute value $|\theta|$ of relative peripheral speed ratio of the brush roller with respect to the photosensitive member satisfying a relationship of $1.5 \leq |\theta| < 5$ (Col 3, lines 40-65, Col 21, line 64).

Ikagawa et al. discloses the image forming apparatus wherein a push-in amount of the charging brush of said contact charger with respect to the photosensitive member is in a range from 0.1 mm to 2.0 mm (Col 18, lines 1-9, Col 34, lines 5-7).

Ikagawa et al. discloses the image forming apparatus wherein said charging brush has a roller form, and the brush fibers of the brush roller were subjected to a hair- inclining processing

Art Unit: 2859

to incline the brush fibers toward upstream in a rotating direction of the brush roller (Col 12, lines 20-67).

Ikegawa et al. does not disclose the contact charger wherein the auxiliary charging particles have acicular forms.

Eichorst et al. discloses a contact charger wherein the auxiliary charging particles have acicular forms (Col 5, lines 39-48).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the contact charger of Ikegawa et al. to include specifically acicular auxiliary charging particles, as taught by Eichorst et al., in order to further improve the electrically conductive layers, which are cost effective, resistant to the effects of humidity change, and which are durable and abrasion-resistant (Eichorst et al., Col 5, lines 7-35).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following application and patents disclose image forming apparatus Nagatomo et al. (U. S. PGPUB 2005/0069345), Ariizumi et al. (U. S. Patent No. 6,728,504), Nagase et al. (U. S. Patent No. 6,081,681), Yoshida et al. (U. S. Patent No. 5,455,661), Takama et al. (U. S. Patent No. 5,305,061), Asano et al. (U. S. Patent No. 5,289,234), Asano et al. (U. S. Patent No. 5,241,342), Asano et al. (U. S. Patent No. 5,225,878), and Edwards et al. (U. S. Patent No. 4,099,186).


Art Unit: 2859

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy R. Cohen whose telephone number is (571) 272-2238. The examiner can normally be reached on 8 am - 5 pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ARC
July 6, 2005



Christopher Fulton
Primary Examiner
Tech Center 2800